flying tail type rigid-flexible printed circuit board, since it is not required to cure an insulator, additional manufacturing costs due to a curing process are not required, and it is possible to implement a flying tail type rigid-flexible printed circuit board with improved filling property by laminating the insulating layer using an uncured insulator.

[0091] Further, in terms of productivity, there is an advantage of utilizing an existing production line as it is.

[0092] The foregoing description illustrates the present invention. Additionally, the foregoing description shows and explains only the preferred embodiments of the present invention, but it is to be understood that the present invention is capable of use in various other combinations, modifications, and environments and is capable of changes and modifications within the scope of the inventive concept as expressed herein, commensurate with the above teachings and/or the skill or knowledge of the related art. The embodiments described hereinabove are further intended to explain best modes known of practicing the invention and to enable others skilled in the art to utilize the invention in such, or other, embodiments and with the various modifications required by the particular applications or uses of the invention. Accordingly, the description is not intended to limit the invention to the form disclosed herein. Also, it is intended that the appended claims be construed to include alternative embodiments.

What is claimed is:

1. A rigid-flexible printed circuit board comprising:
- a core layer including a flexible film having a first circuit pattern layer on one or both surfaces, the flexible film has an area corresponding to an entire area of the rigid-flexible printed circuit board;
- a first insulating layer laminated on a rigid portion of the core layer to expose the first circuit pattern layer on a flexible portion of the core layer and covering the first circuit pattern layer on a rigid portion of the core layer;
- a metal pattern disposed on the first insulating layer to be positioned on the rigid portion, which is adjacent to the flexible portion;
- a second circuit pattern layer disposed on the first insulating layer; and
- a second insulating layer covering the second circuit pattern layer and the metal pattern.

2. The rigid-flexible printed circuit board according to claim **1**, wherein the metal pattern is separated from the second circuit pattern layer.

3. The rigid-flexible printed circuit board according to claim **1**, further comprising:
- a coverlay attached to the first circuit pattern layer on the flexible portion of the core layer.

4. The rigid-flexible printed circuit board according to claim **3**, wherein the coverlay has a portion extending between the first insulating layer and the first circuit pattern layer on the rigid portion of the core layer.

5. The rigid-flexible printed circuit board according to claim **1**, further comprising:
- an outer circuit pattern layer disposed on the outermost top surface of the second insulating layer.

6. A rigid-flexible printed circuit board comprising:
- a core layer including a flexible film having a first circuit pattern layer on one or both surfaces and divided into a rigid portion and a flexible portion, the flexible film has an area corresponding to an entire area of the rigid-flexible printed circuit board;
- a first insulating layer disposed on the core layer to expose the first circuit pattern layer on the flexible portion of the core layer and covering the first circuit pattern layer on the rigid portion of the core layer;
- a second circuit pattern layer disposed on the first insulating layer; and
- a second insulating layer disposed on the first insulating layer to cover the second circuit pattern layer;
- a metal pattern disposed between the first and the second insulating layers to be exposed on side surfaces of the first and the second insulating layers facing the flexible portion F, the metal pattern having a same material as that of the second circuit pattern layer.

7. The rigid-flexible printed circuit board according to claim **6**, further comprising a third circuit pattern layer disposed on the second insulating layer and a third insulating layer disposed on the second insulating layer to cover the second circuit pattern layer.

8. The rigid-flexible printed circuit board according to claim **7**, wherein the third circuit pattern layer is electrically connected to at least one of the first and the second circuit pattern layers through a hole penetrating at least the third insulating layer.

9. The rigid-flexible printed circuit board according to claim **6**, the metal pattern is separated from the second circuit pattern layer.

10. The rigid-flexible printed circuit board according to claim **6**, wherein the second circuit pattern layer is electrically connected to the first circuit pattern layer through a hole penetrating at least the first insulating layer.

* * * * *